A KLUTZ® Guide

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The Best Paper Airplanes You'll Ever Fly

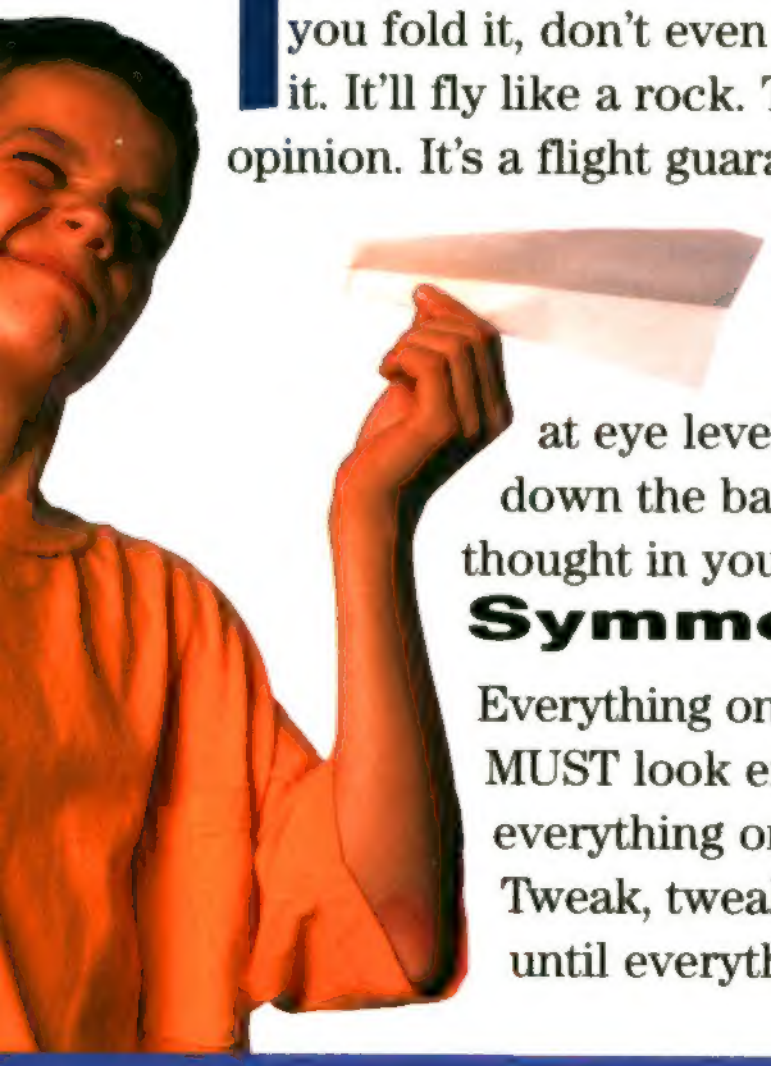
COMPLETE FOLD & FLY INSTRUCTIONS

3 DESIGNS OF GENIUS

How to Trim a

You Absolutely Have

If you don't trim your paper airplane after you fold it, don't even bother throwing it. It'll fly like a rock. This is not an opinion. It's a flight guarantee. Here are the essential steps:



1. Hold your plane up at eye level and stare it right down the barrel. Put only one thought in your mind.

Symmetry.

Everything on the left side MUST look exactly like everything on the right side. Tweak, tweak, and tweak until everything looks "perfect."

Nose-on View: 3 Planes

Perfectly symmetric.

Perfectly trimmed.

One wing up.

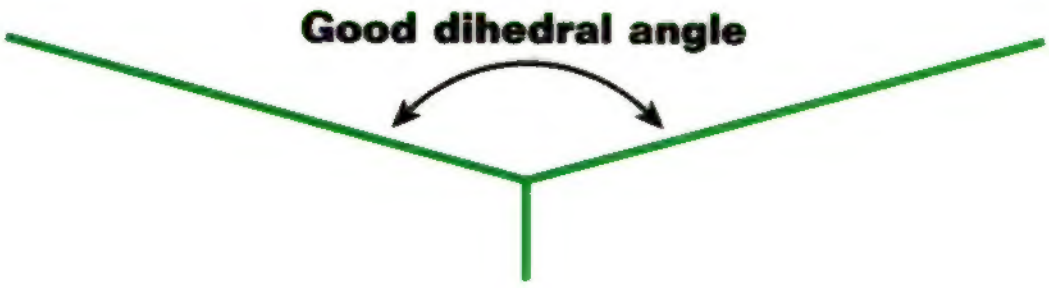
Folds on one wing are too fat.

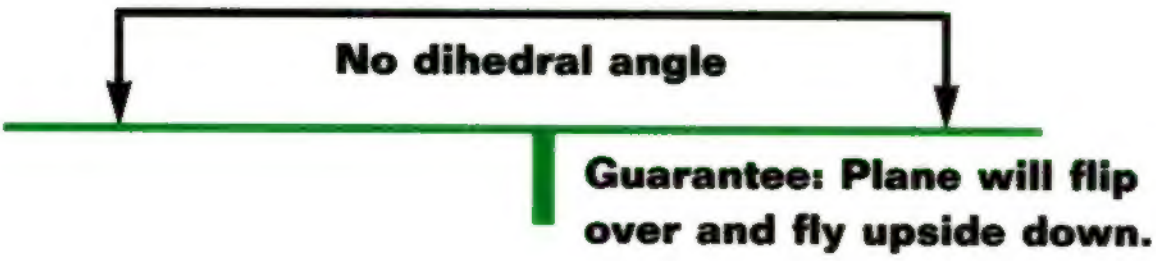
Paper Airplane

to Read This Section

2 Next. Check dihedral. That's pilot-talk for the angle that the wings sprout from the plane at. NOTE: When it leaves your hand, the wings of your plane will tend to flatten out, so bend them up a little extra. If you don't get enough dihedral, the plane will flip over and fly upside down.

PLANE VIEWED NOSE-ON





3 Check your elevons. (Well, you don't really have elevons, but pretend.) In a real plane, they're the hinged strips on the back edge of the wings that pilots adjust up or down (we've marked them in red here). Bend yours up just a tad. Afterwards, double-check for symmetry.

Adjust your elevons up.

Test Fly Your Plane

You have to do this step. It's non-optional.

Gently toss your plane straight ahead, eye-level, so it goes maybe 10 feet. If it floats like a snowflake, but in a gentle sled-ride to the ground, straight-ahead, landing on its belly, not its nose, you're a very lucky person. It's perfectly trimmed. This never happens for us. Here is what happens to us:

Problem: It dives steeply and crash lands on its nose.

Fix: Tweak the elevons up. This is the most common problem of all. We always get it.

Problem: It swoops up, then down, then up, then down, like a roller-coaster.

Fix: Flatten your elevons a bit. They're up too high.

Problem: It glides OK, but turns left or right.

Fix: Tweak the back edge of the body of the plane to the **right** if the plane turns **left;** and tweak it to the **left** if the plane turns **right.**

Problem: It flips over and flies upside down.

Fix: Bend both wings up a little. You need more dihedral.

Problem: It corkscrews into the ground right at our feet.

Fix: Double check for symmetry.

Do all of your tweakings at the very back edges of the plane, in the areas we've shown in purple.

On the wings, tweak up or down.

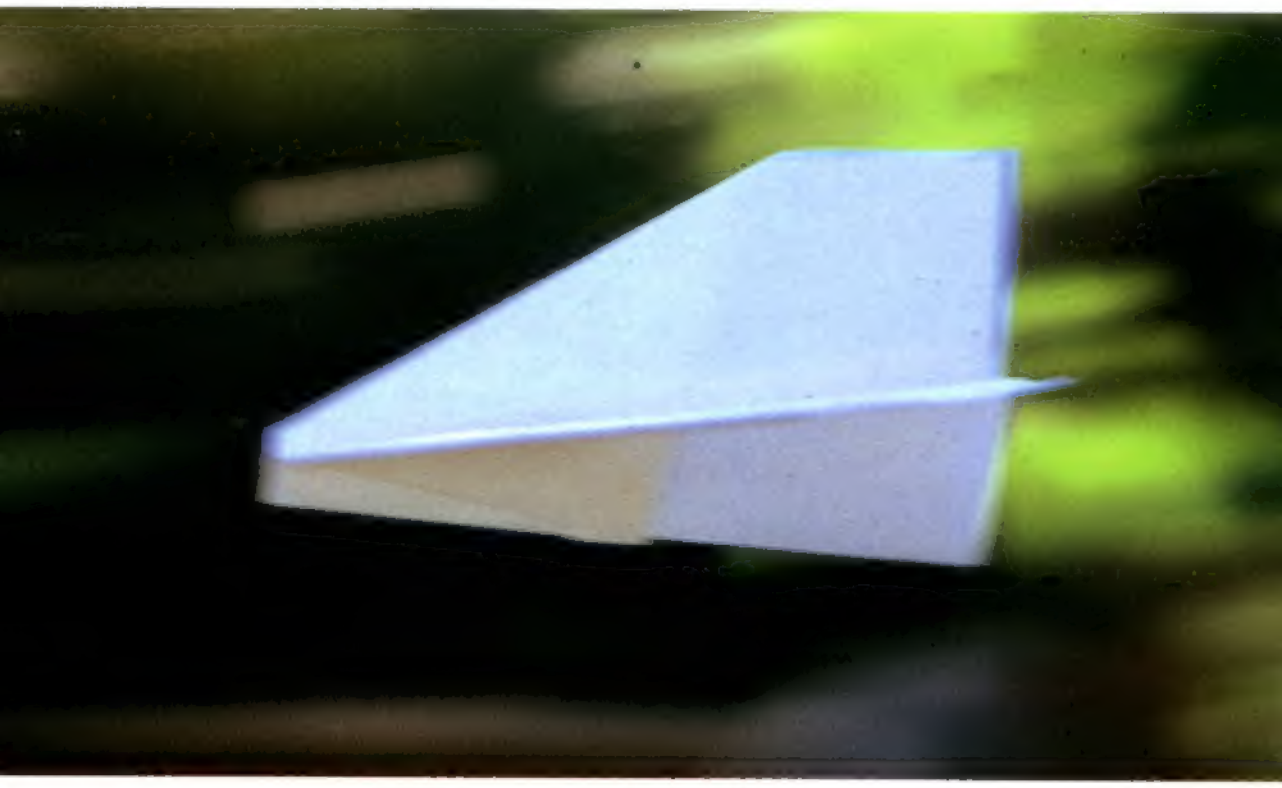
On the body, left or right.

BIG RULE: Make all your tweakings small ones. Little bends make big differences.

How to Launch Your Paper Airplane

After you've test flown your plane (and you can do that in just a few feet) you're ready to launch it. Give it a steady, not-too-fast toss from about eye-level.

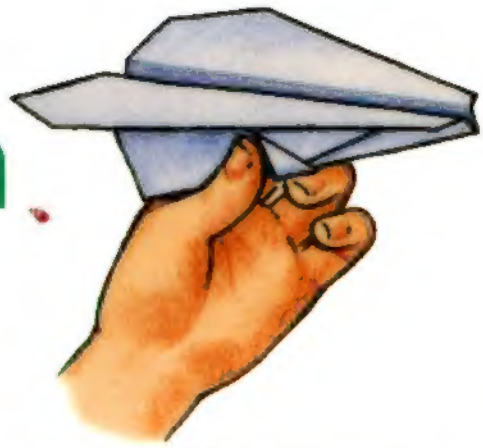
Throw it at the speed it'll fly at and throw it dead flat. If you've gotten it trimmed right, and it doesn't hit the furniture, it should go 50 feet or better in a slow, straight-ahead glide to the ground. If it doesn't, re-trim it (and incidentally, you may well need to re-trim after every hard landing).



The Big Throw

If you're outside, you can haul off and throw each of these planes at a steep, high-speed, toss to the sky. Properly trimmed, they will level off and glide slowly to the ground. (Unless you're lucky and catch a thermal, then you can watch that plane fly out of sight.)

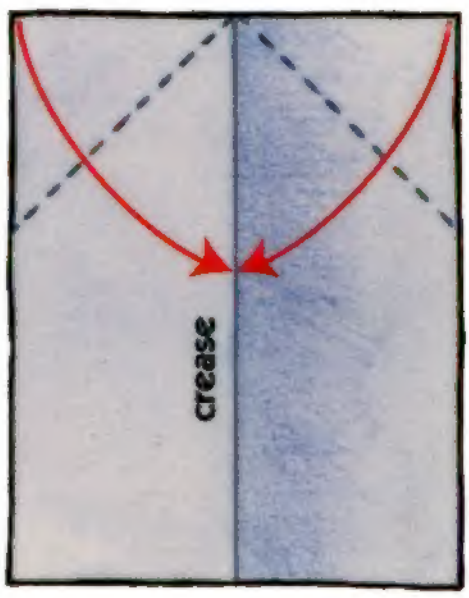
Nakamura Lock



On October 5, 1997, in a very light wind, we flew a Nakamura Lock from the press box at Stanford Football Stadium to the scoreboard. That's about 75 yards, with no loss of altitude. Took almost a minute to get there. If it hadn't hit the scoreboard, it was out of the stadium and would probably still be flying. Our opinion? Finest plane on the planet for performance and simplicity of fold.

1 Fold an 8½ x 11 sheet of paper in half the long way. Crease firmly, then unfold.

2 Fold corners to the middle along dotted lines. Be <u>really</u> precise.



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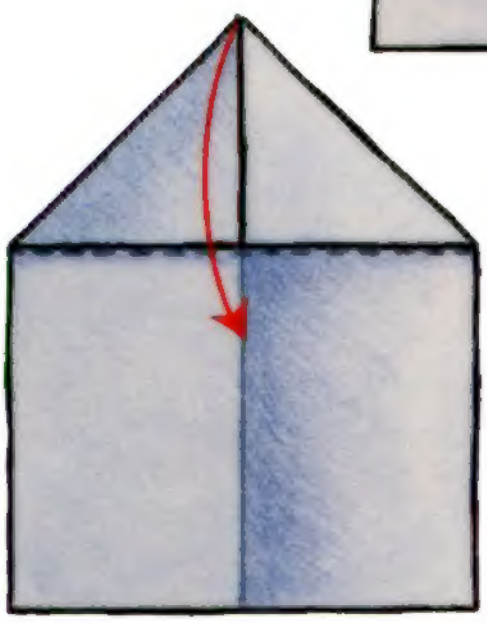
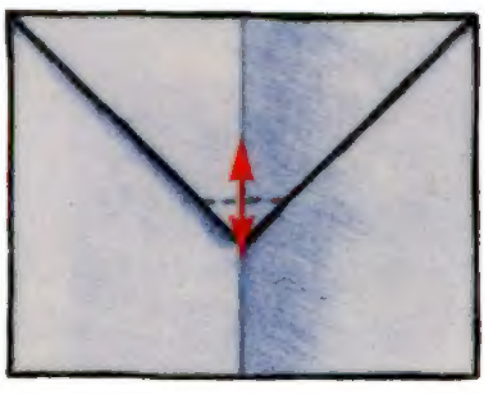
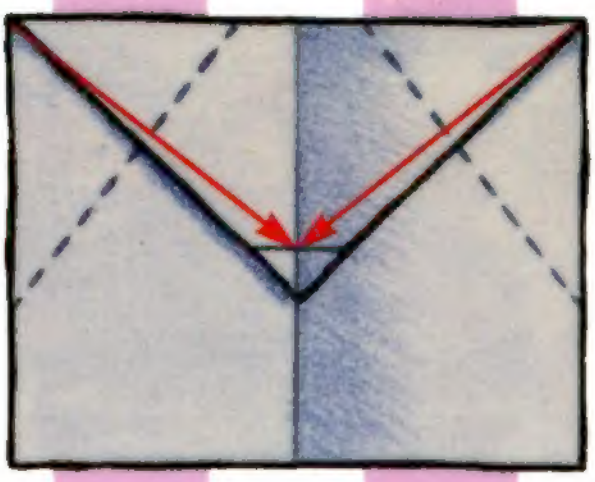


Fold along this dotted line. Exactly.

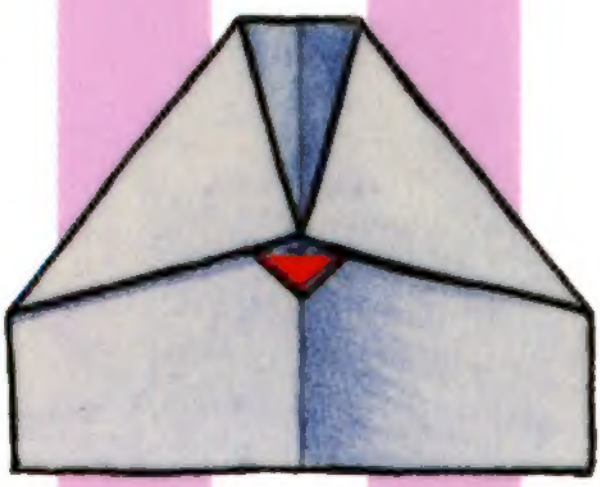
4 Fold tip on dotted line. Crease well. Unfold.



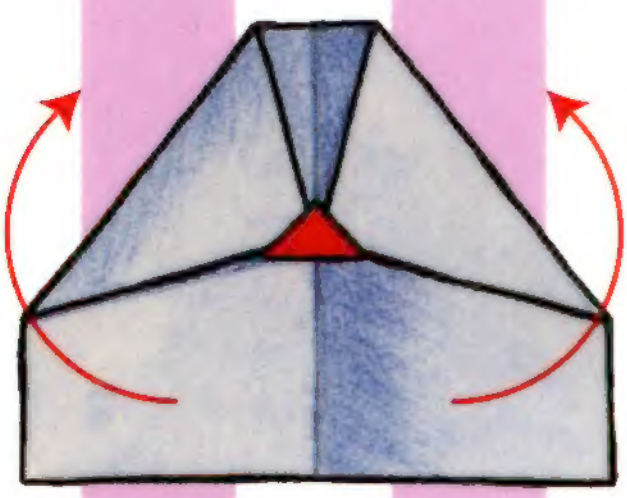
Fold up, then back.



5 Fold top corners in along dotted line.

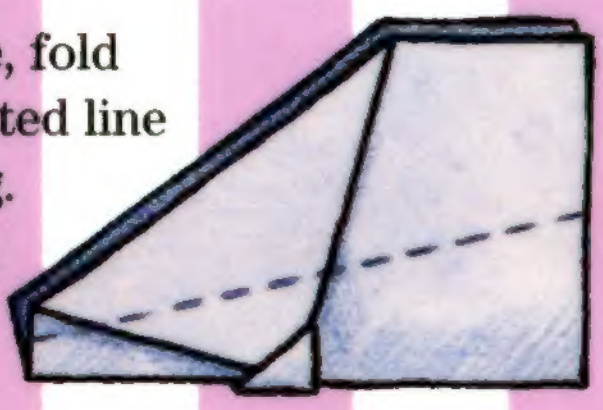


6 Fold center tip back up along the crease you already made.

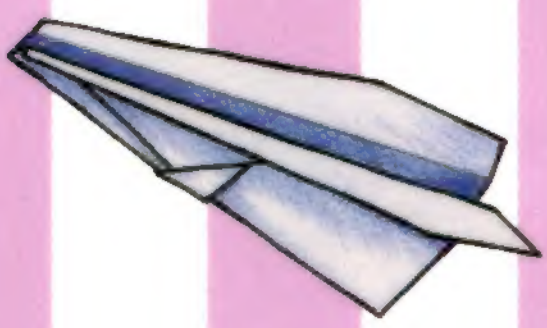


7 Fold entire plane in half away from you.

8 On each side, fold down on dotted line to form wing. Be crisp and precise.



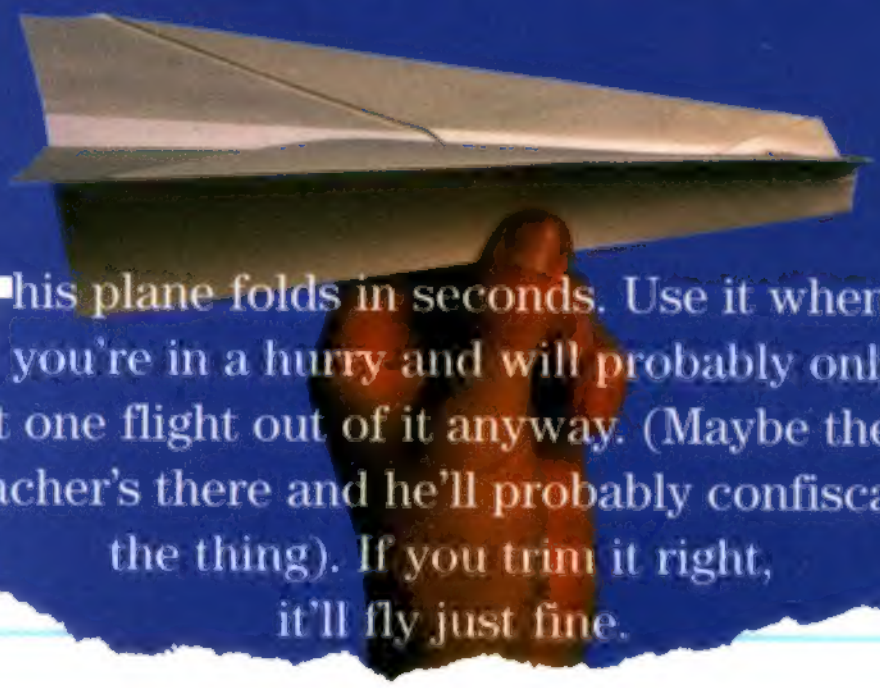
Last fold is critical. Do it at the exact mid-point. Mark it with a pencil if you want.



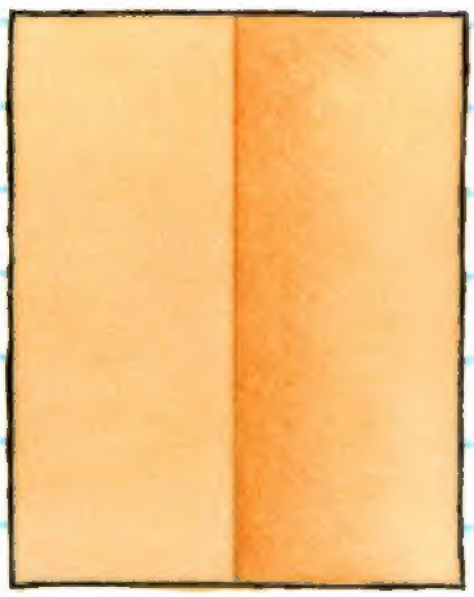
Finished folding.

Now you HAVE to trim...

Balcony Bomber



This plane folds in seconds. Use it when you're in a hurry and will probably only get one flight out of it anyway. (Maybe the teacher's there and he'll probably confiscate the thing). If you trim it right, it'll fly just fine.

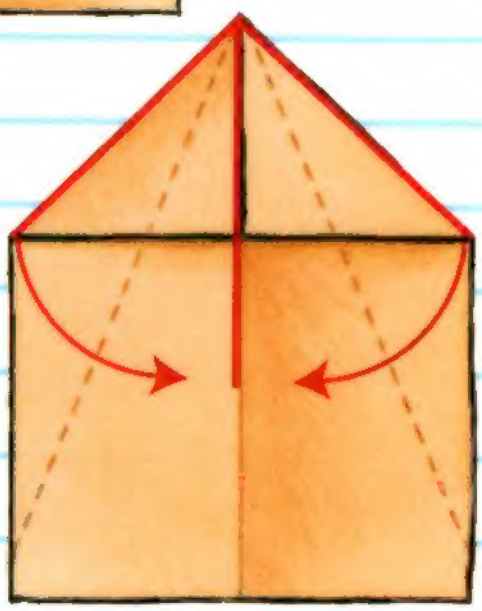


1

Fold an 8½ x 11 sheet of paper in half (the long way). Crease firmly, then unfold. Precisely.

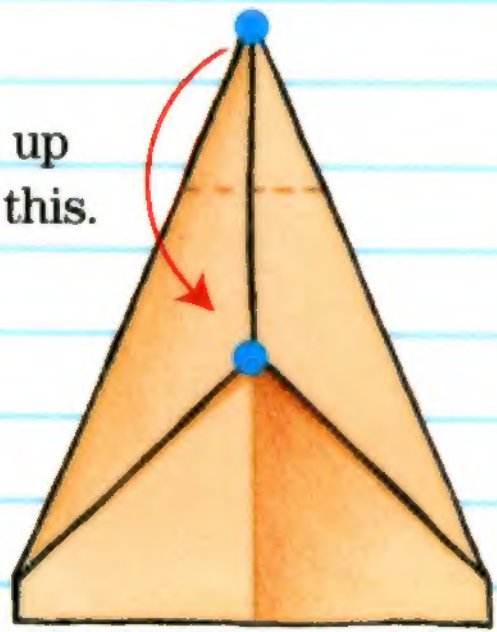
2

Fold the corners in. Do a perfect job.



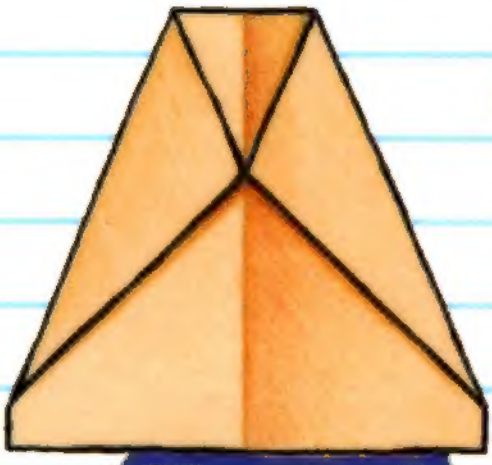
Then fold along dotted lines. Line up the red edges with the red crease.

End up like this.



3

Fold tip down on dotted line, blue dot to blue dot.



4

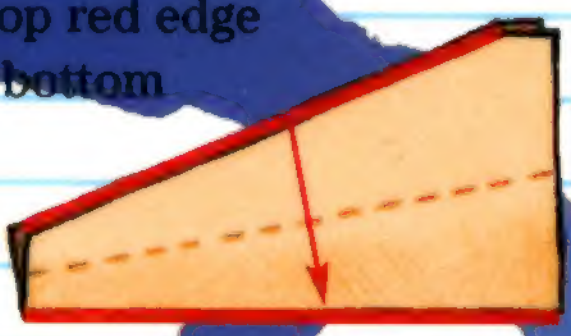
End up like this. Then fold in half along crease.

5

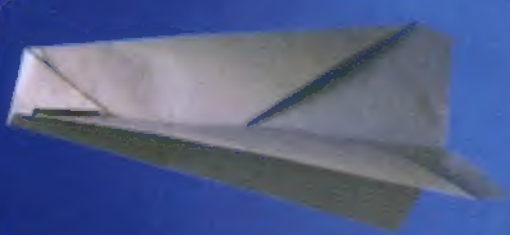
End up like this.

6

Fold the wings down along dotted lines. That means top red edge has to line up with bottom red edge.

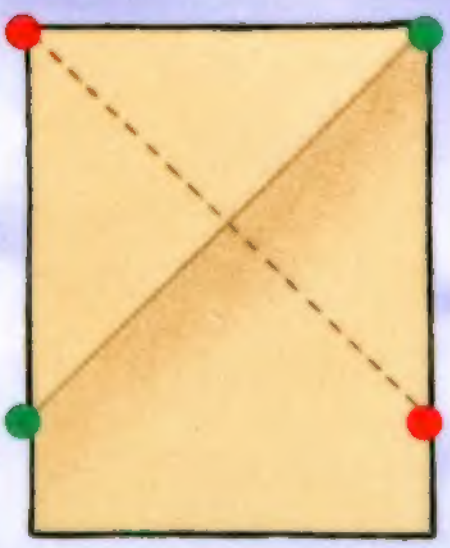


Done folding. Now trim.



The Phoenix

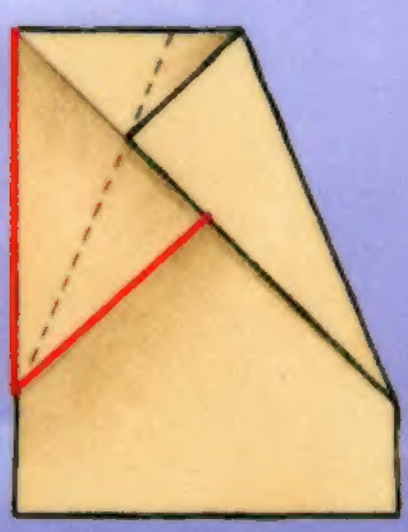
The Phoenix is up a notch from the Bomber. Takes a little longer to fold; flies a little better when you're done. Use it outdoors or in. Trim it right, and it'll outfly anything your friends can fold.



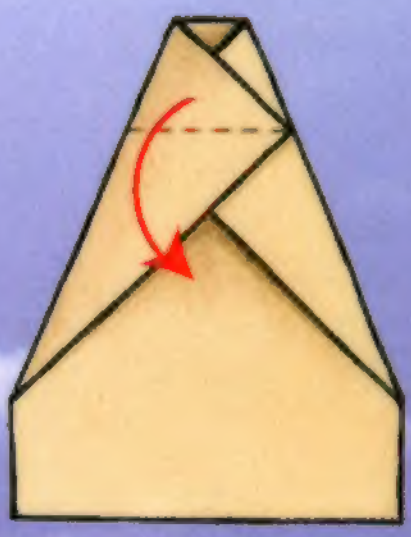
1 **Fold top left corner down to red dot. Crease well, then unfold. Do a perfect job. Fold top right corner to green dot, crease, unfold.**

2 **Line up red edge to red crease. Perfectly.**

End up like this.



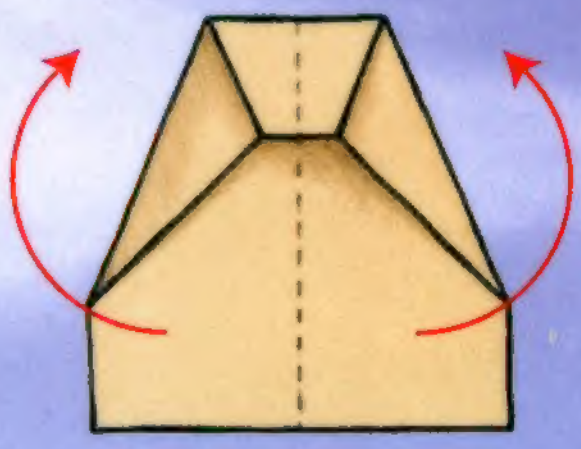
3 **Line up red edge to red crease. Perfectly.**



4 **Fold the tip down on the crease.**

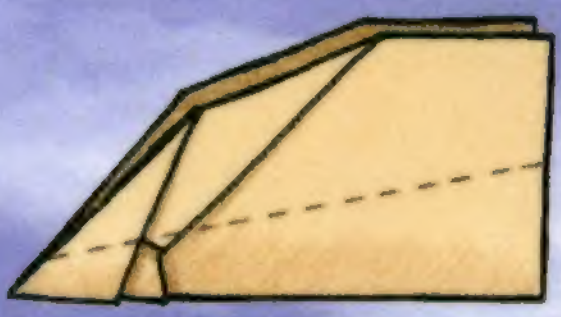
BIG TIP:

Fingers alone are not enough to make really crisp, precise folds. Press your folds with the side of a pencil, or the back of a spoon, to make them sharper.



5 **Fold entire plane in half away from you.**

6 **Fold red edge to red edge as shown (in other words, fold on dotted line). Repeat on other side.**



7 **On each side, fold down along dotted line to form wing. Do another perfect job. Then trim and fly.**

OUR GUARANTEE:

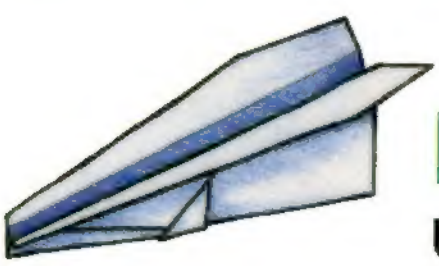
These are fold-and-fly plans to the 3 best paper airplanes on the planet.

Materials Needed?
3 pieces of paper. That's all.

The Phoenix

by John Collins

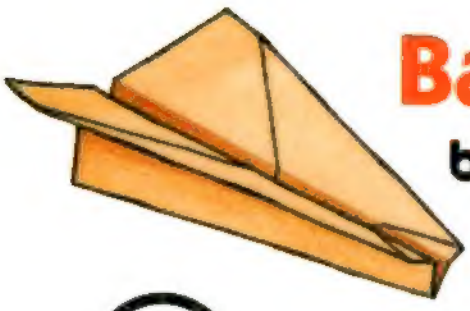
Best Indoor Flight: 64 feet; 7.21 seconds.



Nakamura Lock

by Some Unnamed Genius

Best Indoor Flight: 80.5 feet; 8.91 seconds.



Balcony Bomber

by another Unnamed Genius

Best Indoor Flight:
79.5 feet; 8.97 seconds.

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KLUTZ

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